REMARKS/ARGUMENTS

Claims 1-10 and 19 have been cancelled. Claims 20-22 have been added. Claims 11-18 and 20-22 are pending.

The Examiner rejected claims 11-18 under 35 U.S.C. 103(a) as being unpatentable over Japan Pat. No. 01-274440 by Keiki (hereinafter '440). The Examiner stated that '440 teaches a method of wire bonding wherein a vacuum is applied to a porous surface of a part which supports a lead frame to suppress warping while a wire bonding step is used to bond chips to the lead frame. The Examiner further stated that if '440 does not anticipate Applicant's claimed invention, it is held to have made the claimed invention obvious, in that the base tape recited in claim 11 of the instant application is deemed to be equivalent to element 5 taught by '440.

Attached is an English translation of the abstract of Japan Pat. No. 01-274440 obtained from the Japanese Patent Office Website at http://www19.ipdl.ncipi.go.jp. The English translation states that element 5 is the lead frame. Claim 11, recites that the base tape is connected to the lead frame. Therefore, element 5 relates to the lead frame of claim 11 and therefore is not also equivalent to the tape of claim 11. The Examiner failed to show anything in '440 equivalent to the tape that is separate from the lead frame. '440 teaches holding a lead from using a porous surface. Nothing in '440 teaches or suggests holding base tape by a porous surface, where the base tape is on a surface of a lead frame. For at least these reasons, claim 11 is not made obvious by '440.

Dependent claims 12-18 are also patentably distinct from the cited references for at least the same reasons as those recited above for the independent claim, upon which they ultimately depend. These dependent claims recite additional limitations that further distinguish these dependent claims from the cited references.

For example, claim 14 recites that the porous block is heated. The attached translated abstract of '440 states that the metal plate part 10 is locally heated instead of heating the porous block.

In addition, 18 recites clamping the lead frame to the second side of the porous block. The Examiner failed to point out anything in '440 that teaches or suggests clamping the lead frame to the porous block. These limitations provide a universal clamping mechanism, which

solves the problem that other clamping mechanisms are not universal. Therefore, these limitations are not mere design choices. For at least these reasons the dependent claims are not anticipated or made obvious by the cited references.

New claim 20 recites further removing the lead frame base tape from the porous block and processing a second lead frame that is a different size and shape than the lead frame. Part of the advantage of the invention is that it provides a universal clamping mechanism that is able to process lead frames of different sizes. The device of '440 is not able to do this since it provides portions of a porous block and metal plate over the surface.

New claims 21 and 22 further recite that the first surface of the porous block is a continuous surface over the entire area occupied by the lead frame base tape. As shown in '440 the porous block does not occupy the entire area of the lead frame, but instead uses a plate 10 for heating the lead frame. Such a plate prevents the device in '440 from being a universal clamping mechanism.

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number (650) 961-8300.

Respectfully submitted,
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PATENT ABSTRACTS OF JAPAN

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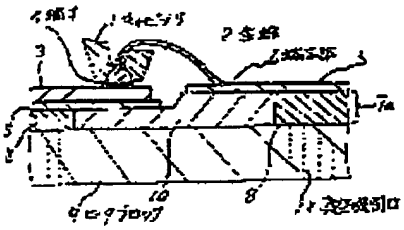
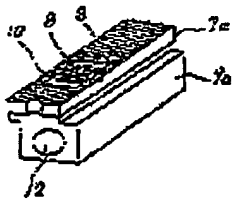
(71)Applicant : **NEC CORP**
(72)Inventor : **ETO KEIKI**

(54) WIRE BONDING METHOD

(57)Abstract:
PURPOSE: To prevent the oxidation of a copper lead frame and the fusion of solder on the lead frame, to reduce man-hours and to prevent the production of defective products, by heating a semiconductor device with a heater plate having a porous part when the wire bonding of the semiconductor device is performed, and sucking a pellet and the lead frame with the porous part in a vacuum state.
CONSTITUTION: A terminal 4 of a pellet 3 and a terminal part 6 of a lead frame 5 are connected with a gold wire 2. At this time, a metal plate part 10 is in contact with the lower surface of the terminal part to be heated. A ceramic porous part 8 having countless air holes are in contact with the other part. A heater plate 7a having such a configuration is used, a region facing the metal plate part 10 is locally heated, and wire bonding is performed. At this time, the lead frame 5 is sucked with a vacuum sucking port 11 which is provided at a heater block 9a having a heater 12 through the countless air holes in the porous part 8. Thus, the floating and warping of leads are suppressed.





LEGAL STATUS

[Date of request for examination]

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